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APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/767,885	01/24/2001	Kimio Inoue	202182US3	2548
22850	7590	12/02/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.			SORKIN, DAVID L	
1940 DUKE STREET			ART UNIT	
ALEXANDRIA, VA 22314			PAPER NUMBER	

1723

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/767,885	<b>Applicant(s)</b> INOUE, KIMIO	
	<b>Examiner</b> David L. Sorkin	<b>Art Unit</b> 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 November 2003 has been entered.

### ***Consideration of Declarations***

2. In a declaration filed 17 November 2003, Kimio Inoue (inventor of the instant invention) discusses the terms "screw segment" and "kneading segment". Dr. Inoue declares that there is a specific structural difference between these two types of segments, stating:

In a screw segment, the helix angle is 8 to 25 degrees (72 [sic] to 65 degrees in twist angle). In a kneading segment, the twist angle is 10 to 40 degrees (50 to 80 degrees in helix angle).

Regrettably, this declaration of Dr. Inoue contradicts at least two other declarations filed with the USPTO by Dr. Inoue. Dr. Inoue filed a declaration stating that he reviewed and understood and was an inventor of subject matter described in a specification (that of application No. 08/997,255, now U.S. Patent No. 5,947,593), which states a kneading segment may have a twist angle substantially outside the now-declared range.

Specifically it states in col. 10 of the patent:

Arrangement and quantity of kneading blades 7 and spiral angle thereof may be arbitrarily selected...

The kneading blade 7 may be formed straight at a spiral angle of 0°, or may be formed with a large spiral angle. The spiral angle should preferably be within a range of from 10 to 60°. While a small

angle reduces the flow of the material in kneading in the axial direction and the resultant increase in the amount of material passing through the tip clearance permits promotion of dispersing action, a large spiral angle allows promotion of mixing within the chamber 4 as a result of an increase in the flow in the axial direction. A spiral angle with a range of from 10 to 60° degrees enable to derive both advantages simultaneously.

Furthermore, the latest declaration by Dr. Inoue also contradicts the instant specification, including the claims, which Dr. Inoue previously declared he review and understood and was the inventor of. Particularly, the instant specification and claims repeatedly refer to kneading blades which are "parallel" to the axis (zero twist angle). It is also noted that the declaration includes a mathematical inconsistency in equating a helix angle of 8 to 25 degrees to a twist angle of 72 to 65 degrees. As Dr. Inoue defines helix angle and twist angle, an 8 degree helix angle corresponds to an 82 degree twist angle.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-3 and 5-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Independent claim 1 is rendered indefinite by its preamble "A screw set in a twin-screw extruder...". It is unclear if the "twin-screw extruder" is required by the claim, or if the screw set is merely intended for use in the extruder. In other words, it is unclear if any additional structure beyond the "screw set" is required by the phrase "in a twin-screw extruder". Applicant has stated in paper No. 7 that claims 1-3 and 5-9 "clearly set forth the sub-combination of a screw set in a twin-

screw extruder". While this statement successfully repeats the preamble, it does not indicate whether or not the phrase "in a twin-screw extruder" further adds structure to the sub-combination screw set.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3, 5, 6 and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US 5,947,593). Regarding claim 1, Inoue ('593) discloses a screw set in a twin-screw extruder comprising a rotor segment (a first segment 1b) comprising at least one kneading rotor having a plurality of blades which provide a plurality of tips (those of 7a,7b,7c) different from each other in the circumferential direction, said kneading rotor having a constant sectional shape (such as the cross-sectional shape of Fig. 4) in the axial direction, as viewed in a section transverse to the axial direction, and a screw segment (a second segment 1b) comprising at least one screw blade, said screw segment, except for crest portions, having the same sectional shape as said rotor segment comprising at least one kneading rotor, as viewed in a section transverse to the axial direction, except for crest portions (see col. 6, line 50-col. 7 line 6; Figs. 6-8). Regarding claims 2-3, the reference discloses that multiple segments may be used and that some or all may be in the form of "disks" (see col. 3, lines 27-32). Regarding claim 5, each counterclockwise, clockwise, and parallel blades

are disclosed by the reference (see col. 10, lines 37-38, Figs. 6-9). Regarding claim 6, Figs. 6-9 each disclose both clockwise and counterclockwise blades. Regarding claim 8, the set comprises two kneading blades (see col. 5, lines 20-23). Regarding claim 9, the set comprises three kneading blades (see col. 5, lines 20-23). Regarding claim 10, Inoue ('593) discloses a twin-screw extruder comprising a barrel (3) having two intercommunicating chambers (4); and a screw set (1) rotatably mounted in each of said chambers so as to mesh with one another (see col. 12, lines 1-13); each screw set comprising a rotor segment (a first segment 1b) comprising at least one kneading rotor having a plurality of kneading blades which provide a plurality of tip clearances (those of 7a,7b,7c) different from each other in the circumferential direction, said kneading rotor having a constant sectional shape (such as the cross-sectional shape of Fig. 4) in the axial direction, as viewed in a section transverse to the axial direction, and a screw segment (a second segment 1b) comprising at least one screw blade, said screw segment, except for crest portions, having the same sectional shape as said rotor segment comprising at least one kneading rotor, as viewed in a section transverse to the axial direction, except for crest portions (see col. 6, line 50-col. 7 line 6; Figs. 6-8). Regarding claim 11, the rotor segment provides tip clearances different from each other in the axial direction (see col. 3, lines 27-32; Fig. 1).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US 5,947,593). As stated above Inoue ('593) discloses all three types of blades. While Inoue ('593) does not explicitly disclose a specific segment having all three blades, it is considered that the embodiment of Fig. 12 together with col. 10, lines 37-38 would have suggested to one of ordinary skill in the art to include all three types in a segment.

#### ***Response to Arguments***

9. Applicant correctly points out that the metes and bounds of the terms "screw segment" and "kneading segment" set forth in Dr. Inoue's latest declaration preclude considering a kneading segment to also be a screw segment. Regrettably, this declaration contradicts the specification which Dr. Inoue, Katsunori Takahashi, Tatsuya Tanaka, Masahiko Kashiwa, Shigehiro Kasai, Yoshinori Kuroda, Hideo Funahashi, Yasuaki Yamane, Koichi Miyake, Masashi Konno and Akira Nishiyama each declared to have reviewed and understood. This specification is that of the applied prior art reference Inoue et al. (US 5,947,593). In shape contrast to Dr. Inoue's latest declaration, column 10 explains that a kneading segment may have an arbitrary angle, which may be small (including zero) or large. It may be optimized to achieve the advantage of axially advancing material. It may balance the advantages of being small and those of being large by being between 10 and 60 degrees.

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 703-308-1121. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 703-308-0457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in cursive script, appearing to read "David Sorkin".

David Sorkin